

AMENDED CLAIMS

What is claimed is:

1. An apparatus for creating, managing and publishing interactive virtual tours, the apparatus comprising: a panorama data acquisition unit implementing means of capturing panoramic data and optionally preparing said panoramic data for further processing; a transform engine responsive to said panoramic data and implementing means of correcting distortions in said panoramic data and/or performing automatic, manual or interactive calibration of said panoramic data and/or transforming said panoramic data into a desired format or set of formats when necessary, wherein said distortion correction is accomplished through steps of: a) loading data including reference data that could be used to derive panoramic imaging system distortion profiles; b) specifying a linear or other predetermined distortion function or set of distortion functions and displaying representations of said distortion function or set of distortion functions; c) using distortion function or set of distortion functions to build a distortion profile for the panoramic imaging system that was used to acquire the reference data; d) performing transformation on panoramic data using distortion profile specified in c) and displaying results of said transformation; e) determining whether distortion is satisfactorily corrected; f) continuing with steps g) and h) if distortion is deemed not to have been satisfactorily corrected and continuing with step i) if distortion is deemed to have been satisfactorily corrected; g) automatically or interactively modifying the distortion function or set of distortion functions using feedback from displayed distortion function representation or transformation results obtained in step d) or by using data loaded in step a); h) repeating steps c) to g) until distortion is judged to have been satisfactorily corrected; i) storing distortion profile obtained in step c) for use in performing transformations on panoramic data acquired using the panoramic imaging system for which data was loaded in step a); a package generator adapted to generate virtual tour packages containing said panoramic data, commands and/or virtual tour data; a viewing engine responsive to said panoramic data and/or virtual tour packages and implementing means for perspective correction, and user interaction with, said panoramic data and/or

optional virtual tour data when necessary; a control engine adapted to facilitate a higher level of interaction with said panoramic data and/or virtual tour data, wherein said control engine is connected operatively to and communicates bi-directionally with said viewing engine, renders representative information about all or parts of said virtual tour, permits a particular portion to be selected from said virtual tour and sends signals to said viewing engine that cause said viewing engine to permit the interactive navigation of said selected portion of said virtual tour, wherein said control engine also indicates or causes to be indicated what portion of said virtual tour is currently selected and what sub-part of said selected portion of said virtual tour is currently rendered, wherein said control engine is responsive to user input and/or commands from said viewing engine and is in turn capable of modifying said representative information about all or parts of said virtual tour in response to said user input and/or said commands from said viewing engine and is further capable of communicating information indicative of such externally induced modifications to said user and/or said viewing engine; a display means for rendering output of said viewing engine, control engine, package generator, transform engine, and/or panoramic data acquisition unit.

2. The apparatus of Claim 1 wherein said predetermined distortion function or set of distortion functions is obtained with supervision.

3. The apparatus of Claim 1 wherein said predetermined distortion function or set of distortion functions is obtained without supervision.

4. The apparatus of Claim 1 wherein said distortion function or set of distortion functions is based on a polynomial of suitable degree.

5. A method of creating, managing and publishing interactive virtual tours, said method comprising: a panorama data acquisition step for capturing panoramic data and optionally preparing said panoramic data for further processing; a transform step for correcting distortions in said panoramic data and/or performing automatic, manual or interactive calibration of said panoramic data and/or transforming said panoramic data into a desired

format or set of formats when necessary, wherein said distortion correction is accomplished through steps of: a) loading data including reference data that could be used to derive panoramic imaging system distortion profiles; b) specifying a linear or other predetermined distortion function or set of distortion functions and displaying representations of said distortion function or set of distortion functions; c) using distortion function or set of distortion functions to build a distortion profile for the panoramic imaging system that was used to acquire the reference data; d) performing transformation on panoramic data using distortion profile specified in c) and displaying results of said transformation; e) determining whether distortion is satisfactorily corrected; f) continuing with steps g) and h) if distortion is deemed not to have been satisfactorily corrected and continuing with step i) if distortion is deemed to have been satisfactorily corrected; g) automatically or interactively modifying the distortion function or set of distortion functions using feedback from displayed distortion function representation or transformation results obtained in step d) or by using data loaded in step a); h) repeating steps c) to g) until distortion is judged to have been satisfactorily corrected; i) storing distortion profile obtained in step c) for use in performing transformations on panoramic data acquired using the panoramic imaging system for which data was loaded in step a); an optional package generation step adapted to generate virtual tour packages containing said panoramic data, commands and/or optional virtual tour data; a viewing step responsive to said panoramic data and/or virtual tour packages and providing means for perspective correction of, and user interaction with, said panoramic data and/or optional virtual tour data when necessary; an optional control step adapted to facilitate a higher level of interaction with said panoramic data and/or optional virtual tour data, wherein said control step is connected operatively to and communicates bi-directionally with said viewing step, renders representative information about all or parts of said virtual tour, permits a particular portion to be selected from said virtual tour and optionally sends signals to said viewing step that cause said viewing step to permit the interactive navigation of said selected portion of said virtual tour, wherein said control step also indicates or causes to be indicated what portion of said virtual tour is currently selected and what sub-part of said selected portion of said virtual tour is currently rendered, wherein said control step is responsive to user input and/or commands



from said viewing step and is in turn capable of modifying said representative information about all or parts of said virtual tour in response to said user input and/or said commands from said viewing step and is further capable of communicating information indicative of such externally induced modifications to said user and/or said viewing step; a display step providing means for rendering output of said viewing step, control step, package generation step, transform step, and/or panoramic data acquisition step.

6. The method of Claim 5 wherein said predetermined distortion function or set of distortion functions is obtained with supervision.
7. The method of Claim 5 wherein said predetermined distortion function or set of distortion functions is obtained without supervision.
8. The method of Claim 5 wherein said distortion function or set of distortion functions is based on a polynomial of suitable degree.